

Notice of Allowability

Application No.

10/679,042

Examiner

Tiffany A. Fetzner

Applicant(s)

SCHUSTER ET AL.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 06/27/2005.
2. ☒ The allowed claim(s) is/are Examiner Amended claims 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☒ including changes required by the Notice of Draftperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☒ to Paper No./Mail Date 10/14/2004.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 09/26/2005.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 09/26/2005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with **Attorney Steven H. Noll Reg. No. 28,982** on September 26th 2005 along with authorization to charge any necessary fees to applicant's deposit account if necessary, the examiner notes that no fees are believed to be necessary at this time.
3. The application has been amended as follows:

A) Replace claim 1 of the June 27th 2005 amendment and response with the following **Examiner amended claim 1**:

Claim 1 ---A magnetic resonance apparatus comprising:

a magnetic resonance scanner having a cavity therein **configured** to receive a subject, said cavity having a boundary surface;

a gradient coil system disposed in said cavity, said gradient coil system having a middle region and edge regions **that are** respectively disposed on opposite sides of, and **adjoin**, said middle region, said middle region having a reduced mechanical stiffness compared to said edge regions; and

a supporting arrangement, **separate from said gradient coil system, supporting said gradient coil system in said cavity, and said supporting arrangement including a central support disposed between** said middle region and against said boundary surface of said cavity. ---

B) Replace claim 2 of the June 27th 2005 amendment and response with the following **Examiner amended claim 2**:

Claim 2 --- A magnetic resonance apparatus as claimed in **claim 1**, wherein said gradient coil system **further** comprises a carrier. ---

C) Replace claim 3 of the June 27th 2005 amendment and response with the following **Examiner amended claim 3**:

Claim 3 --- A magnetic resonance apparatus as claimed in **claim 2**, wherein said gradient coil system **further** comprises a plurality of **sets of sub-coils that respectively form gradient coils, and said sub-coils in said sets of sub-coils being divided among at least two groups that are** disposed on said carrier. ---

D) Replace claim 4 of the June 27th 2005 amendment and response with the following **Examiner amended claim 4**:

Claim 4 --- A magnetic resonance apparatus as claimed in **claim 3**, wherein at least one of **said two groups of sub-coils is** structurally independent. ---

E) Replace claim 5 of the June 27th 2005 amendment and response with the following **Examiner amended claim 5**:

Claim 5 --- A magnetic resonance apparatus as claimed in **claim 3**, wherein said two **groups of sub-coils** in said middle region, are attached to said carrier **and** separated from each other. ---

F) Replace claim 7 of the June 27th 2005 amendment and response with the following **Examiner amended claim 7**:

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Claim 7 --- A magnetic resonance apparatus as claimed in **claim 6**, wherein said **groups of sub-coils** each have a hollow cylindrical shape. ---

G) Replace claim 12 of the June 27th 2005 amendment and response with the following **Examiner amended claim 12**:

Claim 12 --- A magnetic resonance apparatus as claimed in **claim 1**, wherein said gradient coil system has a circumference, and wherein said support arrangement comprises at least three supporting elements, **one of which is said central support**, circumferentially distributed around said gradient coil system. ---

H) Replace claim 13 of the June 27th 2005 amendment and response with the following **Examiner amended claim 13**:

Claim 13 --- A magnetic resonance apparatus as claimed in **claim 12**, wherein **said central support** comprises a threaded bolt with a pressure plate facing said boundary surface of said cavity. ---

I) Replace claim 14 of the June 27th 2005 amendment and response with the following **Examiner amended claim 14**:

Claim 14 --- A magnetic resonance apparatus as claimed in **claim 13**, wherein said gradient coil system **further** comprises a carrier having a threaded bore therein in which said threaded bolt is received. ---

The following is an examiner's statement of **Reasons for Allowance**:

4. With respect to Examiner amended independent **claim 1**: This claim is considered by the examiner to be allowable over the **prior art of record** because the **prior art of record** does not disclose or suggest "an MRI apparatus comprising A magnetic resonance apparatus comprising: a magnetic resonance scanner having a cavity therein configured to receive a subject, said cavity having a boundary surface; a **gradient coil system disposed in said cavity, said gradient coil system having a middle region and edge regions that are respectively disposed on opposite sides of, and adjoin, said middle region, said middle region having a reduced mechanical stiffness compared to said edge regions; and a supporting arrangement, separate from said gradient coil system, supporting said gradient coil system in said cavity, and said supporting arrangement including a central support disposed between said middle region and against said boundary surface of said cavity**" in combination as a whole. It is the entire combination of the claim limitations taken as a whole that constitutes both the novelty and non-obviousness of applicant's claims.
5. With respect to the amended dependent **claims 2-16**, these claims are considered by the examiner to be allowable over the **prior art of record** because they each depend from **examiner amended allowable independent claim 1**.
6. The prior arts of record including **Takeshima** fail to teach suggest or show "a gradient coil system disposed in a cavity of a magnetic resonance apparatus, with the gradient coil system having a middle region and edge regions that are respectively disposed on opposite sides of, and adjoin, said middle region, with said middle region having a reduced mechanical stiffness compared to said edge regions; and a supporting arrangement, separate from said gradient coil system, supporting said gradient coil system in said cavity, and said supporting arrangement including a central support disposed between said middle region and against said boundary surface of said cavity". The **Takeshima** reference fails to show any separate gradient system support arrangement. The most that the **Takeshima** reference shows is that the gradient

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system of the **Takeshima** reference is press-fit or wedged together without any additional components, since in figure 7 component 18 is a recess full of air that is only supported by the edges of component 11. Applicant's invention requires a separate supporting arrangement for the gradient coil system that includes a central support disposed between said middle region and against said boundary surface of said cavity, which in the combination of limitations, as set forth and claimed by applicant, is not taught, suggested, considered or shown by the prior art. Therefore, the examiner considers applicant's examiner amended claim 1 to be novel over the prior art of record.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner's Comment

Priority

8. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

9. A New set of corrected drawings are required in this application because the official draftsman has objected to the drawings submitted **02/23/2004** as being faxed drawings of poor line quality. A **complete set of NEW FORMAL DRAWINGS** including any and all examiner approved drawing changes, that have occurred during this examination are now required. [See the PTO 948 form of the Official Draftsman's Review, which was previously attached to the Office action of October 14th 2004.]

10. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Response to Arguments

11. Applicant's arguments with respect to **claims 1-16** from the June 27th 2005 amendment and response have been considered but the arguments are not persuasive by themselves, because the support features argued, constitute intended use in claim 1 of the June 27th 2004 response, and are not given full patentable weight.

12. The examiner's amendments to the examiner amended claims above are free of new matter, and were performed to correct grammatical concerns, remove the intended use in claim 1 and ensure that each of the limitations set forth in the claims was granted full patentable weight by the examiner. The examiner also amended the "adapted to" language of claim 1, so that the phrase "configured to" was used because no specific adaptation was provided in the June 27th 2005 amended claims, and the phrase "configured to" better qualified applicant's invention.

13. All of the amendments to **Examiner amended claim 1** are fully supported by applicant's originally provided figure 1 and simply clarify the claimed limitations with respect to the locations and positions of other claimed components.

Double Patenting

14. The double patenting issues from the March 3rd 2005 office action are **rescinded** in view of the Examiner amendments to independent claim 1 set forth above.

Prior Art of Record

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) Schuster et al., US patent application publication 2004/0113619 published June 17th 2004, which is the publication of applicant's instant application which is known for purposes of a complete record. This reference is not available as prior art because it is applicant's own work.

B) Heid et al., US patent 6,531,870 B2 issued March 11th 2003, filed December 21st 2001.

C) Morich US patent 5,296,810 issued March 22nd 1994.

D) McGinley et al., US patent 6,208,144 B1 issued March 27th 2001, filed May 18th 1999. [See figures 1 through 3, abstract, col. 1 line 50 through col. 5 line 52.]

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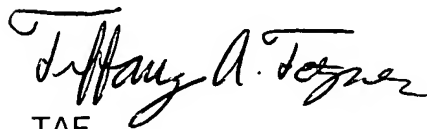
- D) **Sellers et al.**, US patent 6,107,799 issued August 22nd 2000.
- E) **Schuster** US Patent Application Publication 2004/0113618 A1 published June 17th 2004, filed October 3rd 2004, which has the same filing date as applicant's instant application.
- F) ***Takeshima** US patent 6,154,110 issued November 28th 2000.
- G) ***Damadian et al.**, US patent 6,346,816 B1 issued February 12th 2002, filed November 26th 1997.
- H) **Minas** US patent 6,456,074 B1 issued September 24th 2002, filed January 28th 2000.
- I) **Schultz et al.**, US patent 6,933,723 B2 issued August 23rd 2005; filed January 15th 2003. This reference is not available as prior art against the claims of the instant application, because its effective US priority date is later than applicant's US priority date.
- J) **Schultz et al.**, US patent application publication 2005/0083057 A1 published April 21st 2005; filed January 15th 2003 which corresponds to **Schultz et al.**, US patent 6,933,723 B2 issued August 23rd 2005; filed January 15th 2003. This reference is also not available as prior art against the claims of the instant application, because its effective US priority date is later than applicant's US priority date.
- K) ***Renz et al.**, US Patent Application Publication 2005/0040826 A1 published February 24th 2005, filed October 3rd 2004, which has the same filing date as applicant's instant application. This reference is therefore not available as prior art against the instant application, but is noted for the purposes of a complete record.
- L) **Schuster** US patent 6,842,005 B2 issued January 11th 2005, filed October 3rd 2005 which corresponds to **Schuster** US Patent Application Publication 2004/0113618 A1 published June 17th 2004, filed October 3rd 2004, which has the same filing date as applicant's instant application. This reference is therefore not available as prior art against the instant application, but is noted for the purposes of a complete record.
- M) **Alich et al.**, US patent 4,596,885 issued September 18th 1990.
- N) **Saho et al.**, US patent 5,084,676 issued January 28th 1992.

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Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.



TAF

September 26, 2005



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800